

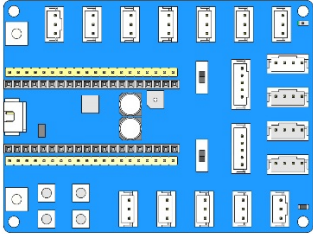
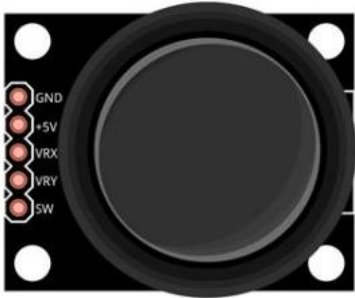



Lesson 9 How to use the Joystick

In this lesson, we will learn a new electronic module Joystick. In this project, we will read the output data of a Joystick and display it to the Terminal screen.

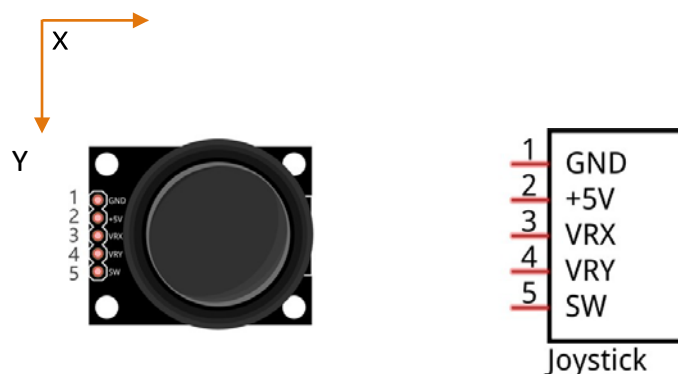
9.1 Components & Parts

Components	Quantity	Picture	Remark
Raspberry Pi Pico	1		
USB Cable	1		
Pico Expansion board	1		
Joystick	1		Not included in the Kit, you can prepared by yourself
5-Pin wires	1		

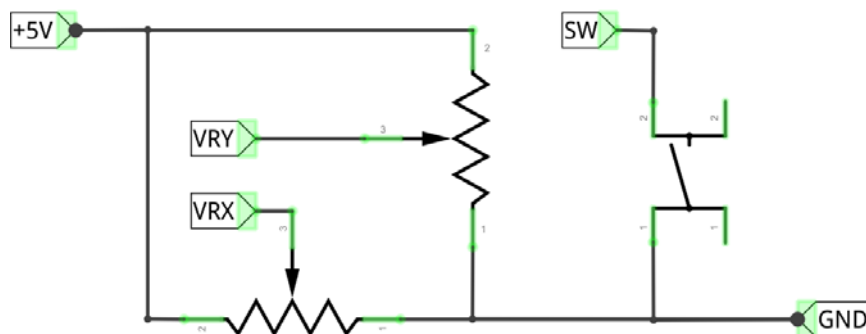
Componentknowledge

Joystick

A Joystick is a kind of input sensor used with your fingers. You should be familiar with this concept already as they are widely used in gamepads and remote controls. It can receive input on two axes (Y and or X) at the same time (usually used to control direction on a two dimensional plane). And it also has a third direction capability by pressing down (Z axis/direction).



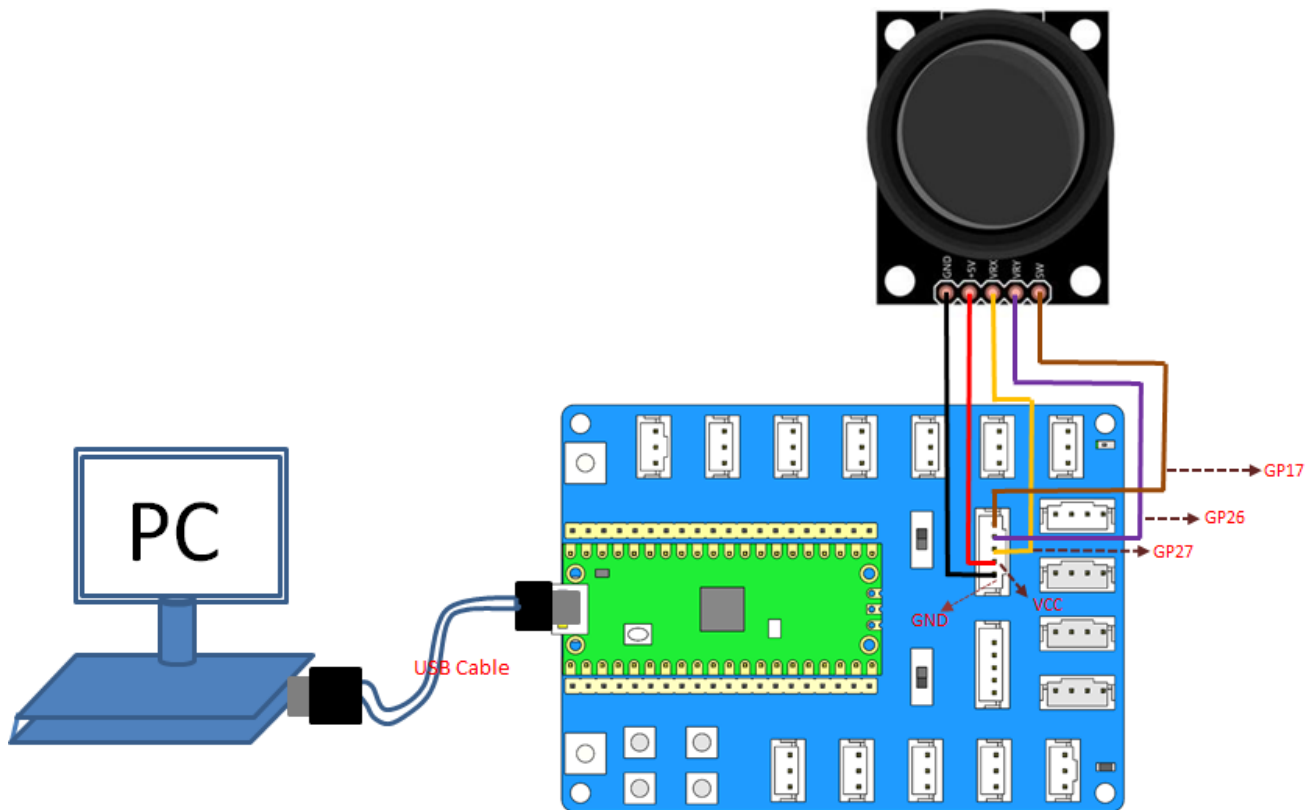
This is accomplished by incorporating two rotary potentiometers inside the Joystick Module at 90 degrees of each other, placed in such a manner as to detect shifts in direction in two directions simultaneously and with a Push Button Switch in the “vertical” axis, which can detect when a User presses on the Joystick.



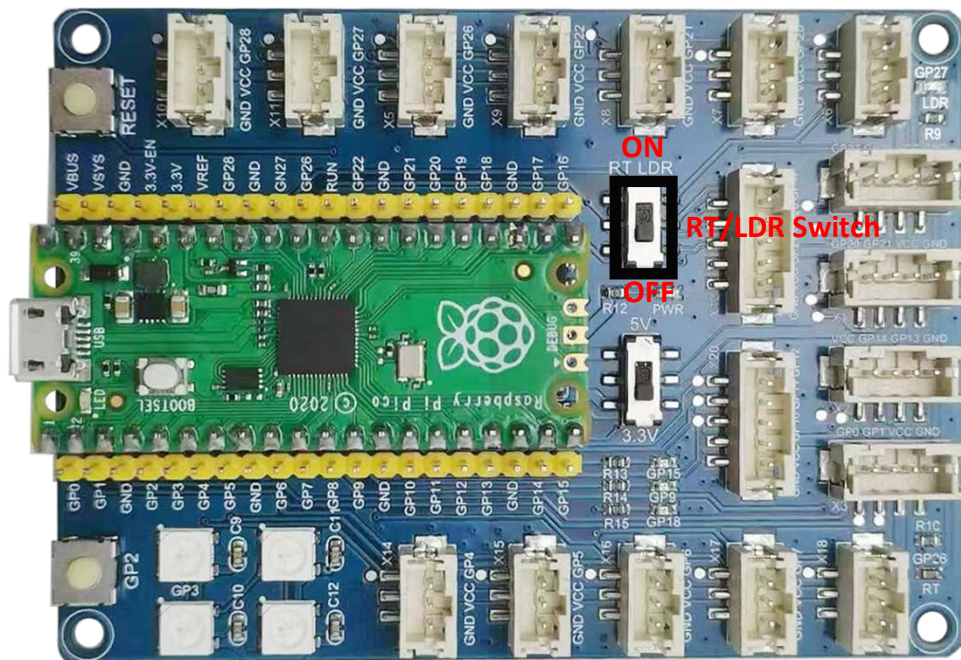
When the Joystick data is read, there are some differences between the axes: data of X and Y axes is analog, which needs to use the ADC. The data of the Z axis is digital, so you can directly use the GPIO to read this data or you have the option to use the ADC to read this.

9.2 Connection diagram

The Joystick module needs to be connected to the 5PIN port on the Pico Expansion board. In this lesson, we defined $x=Pin(27)$, $y=Pin(26)$, $z=pin(17)$. The hardware circuit like below.

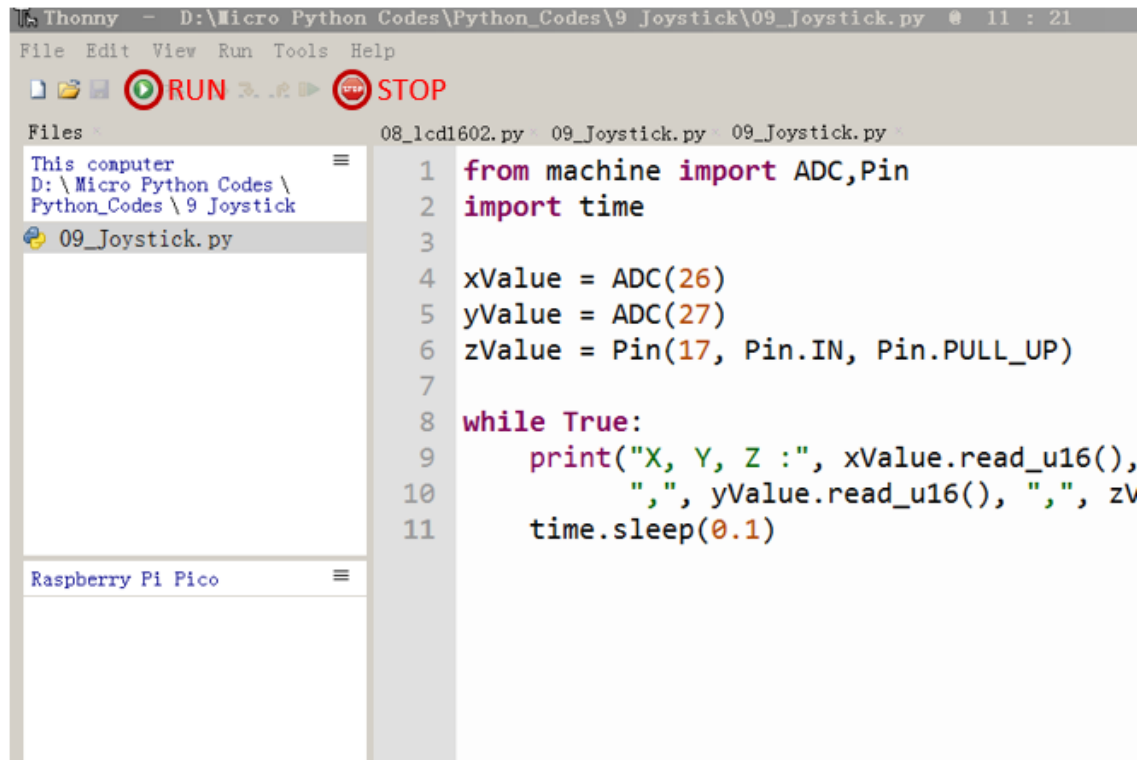


Note: the RT/LDR switch should turn to OFF side



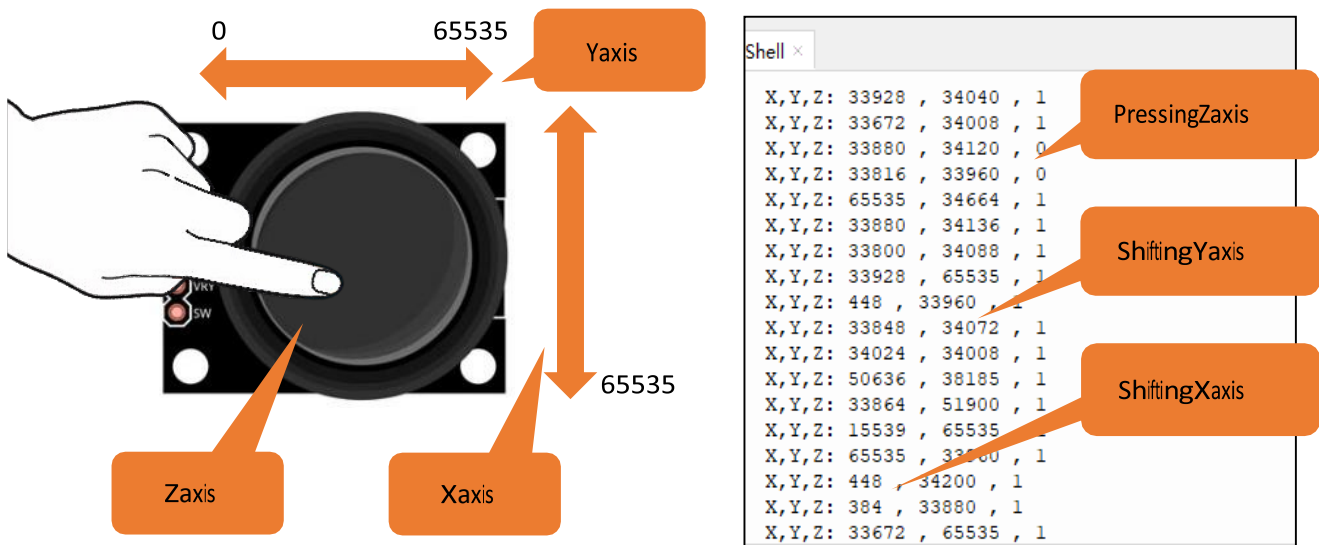
9.3 Run the program

Open “Thonny”, click “This computer” --- “D:” --- “Micro Python Codes” --- “Python_Codes” --- “9 Joystick” and double click “09_Joystick.py”.



```
1 from machine import ADC,Pin
2 import time
3
4 xValue = ADC(26)
5 yValue = ADC(27)
6 zValue = Pin(17, Pin.IN, Pin.PULL_UP)
7
8 while True:
9     print("X, Y, Z :", xValue.read_u16(),
10         ",", yValue.read_u16(), ",", zValue.read_u16())
11     time.sleep(0.1)
```

Click “Run current script”. Shifting the Joystick or pressing it down will change the printed data in “Shell”. Press Ctrl+C or click “Stop/Restart backend” to exit the program.



9.4 Code

08_lcd1602.py

```
● from machine import ADC,Pin
1. import time
2.
3. xValue = ADC(26)
4. yValue = ADC(27)
5. zValue = Pin(17, Pin.IN, Pin.PULL_UP)
6.
7. while True:
8.     print("X, Y, Z :", xValue.read_u16(),
9.         ",", yValue.read_u16(), ",", zValue.value())
10.    time.sleep(0.1)
```

9.5 What's Next?

THANK YOU for participating in this learning experience!

If you find errors, omissions or you have suggestions and/or questions about this Lesson, please feel free to contact us: cokoino@outlook.com

We will make every effort to make changes and correct errors as soon as feasibly possible and publish a revised version.

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